DOCUMENT RESUME

ED 191 268 FL 011 241

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TITLE "Don't You Fall Me Down": Children's Generalizations Regarding Cause and Transitivity. Papers and Reports on Child Language Development, No. 17.
INSTITUTION Stanford Univ., Calif. Dept. of Linguistics.
PUB DATE 79
NOTE 10p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Child Language: Cognitive Development: *Error Analysis (Language): Error Patterns: *Language Acquisition: Language Patterns: Language Research: Nouns: Preschool Children: *Sentence Structure: Speech Communication: Speech Habits: Syntax: *Verbal Development: Verbs

ABSTRACT

A study of overregularized use of verbs by two children over a period when they were 2 1/2 to 5 years of age shows overregularizations in two directions: non-causative verbs were used as causatives: and causative verbs were used non-causatively. According to terminology from logic, predicates were classified according to the number of noun-phrase arguments that occur with them: intransitives take one argument, transitives take two arguements, and bi-transitives take three. Analysis of the data indicated that: (1) children's overregularizations reflect a paradigm not in terms of deep case roles or semantic primitives, but in terms of syntactic positions, rather than a directional rule: and (2) the generalizations are not in terms of the semantic element "cause," but in terms of the number and grammatical relations of noun phrase arguments associated with the verb. (AMH)

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"DON'T YOU FALL ME DOWN": CHILDREN'S GENERALIZATIONS REGARDING CAUSE AND TRANSITIVITY

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Overregularized uses of non-causative verbs as causatives, as in "I'm just gonna fall this on her", have been recorded and described by Bowerman as supporting a grammar model in which causative verbs are derived from non-causative verbs plus the abstract semantic element CAUSE. My diary data for two children shows similar overregularizations, but also shows overregularizations in the opposite direction, i.e., causative verbs used non-causatively, as in "I think I better put it down there so it won't lose." Analysis of the data indicates that the children's overregularizations reflect a paradigm rather than a directional rule; furthermore, the children's generalizations are not in terms of the semantic element CAUSE, but rather in terms of the number and grammatical relations of noun phrase arguments associated with the verb.[1]

When my daughter was about two and a half years old I began to notice interesting verb uses in her speech--for example, in sentences like "Don't fall my book" and "Stay your head up." Melissa Bowerman noted similar utterances in the speech of her daughter Christy and analyzed them in a paper delivered at the 1974 Stanford Child Language Research Forum. Bowerman (1974) interprets these utterances in the light of recent work by linguists (e.g., McCawley 1968, Lakoff 1970, Lyons 1968, Kastovsky 1973) on the underlying structure of causative sentences. As viewed by Bowerman, the child hears intransitive and transitive verb pairs in English like "The door opened" and "He opened the door"; "The window broke" and "He broke the window". The child also hears intransitive verbs like fall, and, by analogy with the open and break pairs, produces "I'm just gonna fall this on her". For English verb pairs like open and break, the transitive member of the pair has causative meaning, and can be given an approximate paraphrase like "He caused the door to open", "He got the door open", "He had the door opened", or "He let the door open". The intransitive member of the pair does not have causative meaning. According to Bowerman, in order for the child to create novel transitives by analogy with the open/open and break/break model, "she must have recognized the causative member of a pair as implicitly containing the meaning of the noncausative member of a pair plus an additional component suggested by the term CAUSE" (Bowerman 1974:150).

Bowerman's analysis can be used to describe many of the examples produced by my daughter Jennifer, and later by my son Benjy. A few representative examples are given in (1), where B indicates Benjy's utterances and J indicates Jennifer's, with the age given in years and months.

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(1) Constructions in which one-argument verbs are used with two arguments

B 2;5 fall — I did fall my vitamin. (dropped it accidentally)
dance — I'm dancing Jeremy Fisher. (causing stuffed toy to dance)
2;7 stay — Let's, let's stay him in the car. (leave bear in car)
4;4 faint — I will make Darth Vader, and he will faint you! (cause you to faint)
J 3;1 cough — Yuck! It coughs me... The thing coughs me... I cough when I put it in my mouth.
3;6 (be) cold — It colds my bottom. (sitting on metal stool, which makes J's bottom cold)
3;8 (be) inside out — I can't inside this out. (turn it inside out)
4;5 bleed — Benjy might poke himself and bleed his hands, so I'm not gonna let him do it. (cause to bleed)
4;7 be — I can pour without being it on the table. See: I don't have to put it on the table. (J holds glass in her hand while pouring milk into it)
8;6 live — I'd like to live you around here. (J would like her Grandma to live around here)

In the examples that I (a) was present to hear, (b) noticed, and (c) managed to record, over 70 different intransitive verbs were involved in novel transitives; they are listed in (2). The list includes action verbs like break, as well as stative predicates that correspond to the stative (be) open, as in "The door was open", with its transitive counterpart, as in "Open the door".

(2) One-argument verbs used with two arguments by Jennifer and/or Benjy

go	sit	dive	spill over	(be) straight
go up	lie	wade	overflow	sharp
come	run	float	sound	tight
come up	scram	bleed	order	intact
come out	fly	cough	be (on)	inside
come off	gallop	itch	stick out	inside-out
stay	climb	feel	pop	upside-down
fall	ride	sleep	reach	plural
fall down	jump	faint	(be) cold	interest(ing)
fall off	jump down	live	hot	full
fall out	dance	disappear	short	stuck
slip down	sing	answer (reply)	frozen	caught
leave (depart)	swim	clap	flat	lost
stand up	leap	blow	curly	on
				off

If we use terminology from logic, we can classify these predicates according to the number of noun-phrase arguments that occur with them; intransitives take one argument, transitives take two arguments, bi-transitives take three. For Jennifer, a transitive verb like drink, with two arguments, can also occur with three arguments, as in (3). The transitive verb guess is used with three arguments by both Jennifer and Christy. Jennifer has something in her hand behind her back, and in-

vites her aunt to try to guess what it is; Jennifer turns to me and says, "I'm trying to guess Aunt Ruth what I have." Christy's similar version is "I'm gonna guess it to him", after which she asks her father to guess the answer to a puzzle.

(3) Constructions in which two-argument verbs are used with three arguments

B 4;3 hold Now, hold it to me! Give it to me! (let me hold balloon)
4;7 take a piggyback ride Take me a piggyback ride! (B wants a piggyback ride on D)
J 3;8 drink And I will drink the milk. You can drink me the milk. (feed, help to drink)
4;8 guess I'm trying to guess Aunt Ruth what I have. (J wants Aunt Ruth to guess what she has in her hand)
Other transitive verbs used in this way: catch, spell, hear, see, take a bath, take a ride.

The constructions in (1) and (3) are novel because each of them has an extra argument. In describing them we can utilize the concept of valence, as used in typological description by Eastern European linguists, referring to the number and arrangement of arguments in a construction: its valence is the number of arguments it contains. In the children's novel constructions, then, the valence has been increased by one.

Bowerman recorded over 100 examples of this type, using about 40 different verbs. I recorded about 200 examples using about 80 different verbs, of which about 20 overlapped with Bowerman's list, so the total for Jennifer, Benjy and Christy comes to about 100 different verbs.

A child's overregularizations provide special windows on his organization of his linguistic knowledge. A child says one foot, two foots, and we see that he has internalized a generalization about the singular/plural relationship. He says comed and goed, and we infer that he has reached a generalization regarding time and morphological patterns. What, then, do these novel valence constructions tell us about the child's organization of his linguistic knowledge? In Bowerman's view, the novel form results from the child's combination of the meaning of the non-causative verb plus the abstract semantic element CAUSE. According to Bowerman, errors like these "provide strong support for a model of lexical structure which regards the relationship between causative verbs and their non-causative counterparts as derivational or inclusive" (Bowerman 1974:150).

There is another way to interpret errors like those in (1) and (3), however. The child may observe that a number of verbs, like open and break, can be used either intransitively or transitively. This view tends to suggest a grammar model in which the same lexical item can have two different functions, depending on the number and nature of the noun phrases involved. (Versions of this approach have been put forth by for example Jespersen 1927 and Fillmore 1968). Bowerman considers this approach but rejects it. Such a model would predict that a child would use intransitives in a transitive causative sense, but it would also

predict the opposite kind of error, namely, using transitive verbs intransitively (cf. Bowerman 1974:148). Errors of this latter type did occur in Christy's speech (for example, she says "Bert knocked down" when Bert fell). But, according to Bowerman, they were extremely rare compared to the reverse error. Bowerman concludes that the child's errors reflect a directional process, from intransitive to transitive, involving the addition of the abstract meaning element CAUSE to the verb.

However, in contrast to Bowerman's diary data, mine shows a large number of errors in the opposite direction. For each child, I first noticed novel transitives at about age two and a half, and novel intransitives two or three months later (the children may well have produced intransitives as well as transitives before the date I first noticed them, however). For example, at two years nine months Jennifer was holding a clock and said, "I can't hear it." She put the clock to her ear and said, "It can hear now". In this case the analogy to open is really quite straightforward: compare "I can't open it" and "It can open now". Examples of this type from both children's speech are given in (4). About 55 transitive verbs were used intransitively; they are listed in (5).[2]

(4) Constructions in which two-argument verbs are used with one argument

B 3;1	pull	Come and see what Jenny got today. (B pulls on M's hand, M does not move) Pull. Pull! Come on!
3;3	eat	We have two kinds of corn: popcorn, and corn. Popcorn: it crunches. And corn doesn't crunch; it eats!
3;7	lose	I think I better put it down there so it won't lose. (won't get lost)
3;8	see	They don't seem to see. Where are they? (B and M are looking for B's sandals)
3;9	read	What does it read about? (it = printed dial of toy blood pressure gauge)
3;11	bother	You're bothering me! You keep on talking to her! And that makes me bother!
J 2;9	hear	I can't hear it. (puts clock to ear) It can hear now. (J can hear clock ticking)
8;3	fix	Do you think it'll fix? (D trying to repair refrigerator)
8;5	attract	They attract by the peanuts in the snow. (squirrels see peanuts in snow, come to the porch for more)

With a model that correlates verb meaning with the number of arguments, if we find two-argument verbs used with just one argument, as in (4), we might also expect to find three-argument verbs used with just two arguments. And we do find these, as in (6). About 55 different transitive verbs were used intransitively, as listed in (5). I have found only a handful of bitransitives used transitively, but this probably reflects the fact that English has so many transitive verbs and relatively few bitransitives.[3]

For Benjy, Jennifer and Christy, the number of verbs used with

increased valence was 49, 49 and 42, respectively. For Benjy, the number of verbs used with decreased valence was 49. The comparability of the numbers suggests that the situation might be viewed as reflecting two different uni-directional derivational rules--or, in the absence of evidence suggesting that the rules are qualitatively different, a single bi-directional rule.[4]

(5) Two-argument verbs used with one argument

hear	lift	make	hold	eat	cut[5]
see	lift up	finish	hold up	swallow	wash
look (at)	keep up	take out	keep down	bother	turn on
attract	push	put on	knock down	bite	turn off
leave	drop	take off	knock over	scrape	erase
lose	pull	step (on)	mix up	tape	
waste	pull out	kick	stuff		
draw	pull off	blow	throw		
read	pick up	drive	set off		
spell	dump	tie	undo		
time	vacuum up	fix	rent out		

(6) Constructions in which three-argument verbs are used with two arguments

B 2;8 call She calls "Fluffy Cat". (she, the cat, is called "Fluffy Cat")

2;11 call Lunch does not call a birthday cake. (at lunch B wants a birthday cake, and when M suggests we pretend his peanut butter sandwich is a birthday cake, he is annoyed)

J 2;10 put I wanna take it out so it can't put on my nose. (J wants to take ice cream out of cone so that it won't get on her nose as she eats it)

Other bitransitive verbs used in this way: tell, show.

If we look at how other languages relate transitives and intransitives, we find a mixed picture. As charted in (7), we see that in Chuvash, for example, the transitive/causative has an additional suffix. However, other languages, such as Russian, show the opposite pattern: the intransitive has the suffix. Grammarians have described situations like these in terms of directional derivational rules, going from the less

(7) Intransitive/transitive correspondences

	intransitive (one argument)	transitive (two arguments)
Chuvash	sün 'go out (e.g., fire)'	sünter 'extinguish'
Russian	lomat'sja 'break'	lomat 'break'
Swahili	chem-k-a 'boil'	chem-sh-a 'boil'
English	(be) rich	enrich
	(be) melted (stative)	melt
	(be) quiet	quiet
	die	kill
	break	break

complex morphologically to the more complex form; the Chuvash and Russian rules would go in opposite directions. In some Bantu languages, such as Swahili, the transitive and intransitive forms each have a distinctive affix, suggesting a model in which related forms in a paradigm are available to the speaker. English presents a mixed bag in which all options can be found--that is, going from intransitive to transitive for enrich, going from transitive to intransitive for the stative (be) melted, and showing a non-directional paradigm for quiet, kill and die, and break. For the child, the existence of novel verbs with increased valence as well as decreased valence suggests that this aspect of his linguistic knowledge is organized on a paradigm model rather than in terms of directional processes.

For the child, it appears that one of the arguments is optional. What is the nature of this optional argument? We might say that the child merely adds an Agent to an intransitive to form the transitive; but this won't work, as Bowerman points out, because many of the intransitive (noncausative) verbs already have Agents (such as come, go, sing, eat, drink). Generating novel intransitives by deletion of an Agent from the transitive form is inadequate to account for the examples in (4), because sensory verbs like hear and see don't have Agents to begin with.

The decreased valence sentences in (4) and (6) and the increased valence sentences in (1) and (3) reflect the same understandings, and we want our description to reflect this. For the constructions in (1), describing them as having incorporated the semantic element CAUSE is consistent with their meanings in most cases. However, in a few instances the children's novel sentences are transitive but not semantically causative, as in (8). The children's novel transitives, then, need not necessarily incorporate CAUSE.

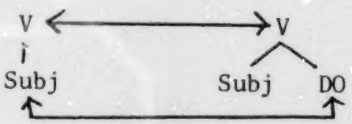
(8) Novel transitives without CAUSE

B 2;8	sound	Did you sound that?! Did you sound that funny guy?! (B hears recording of rock singer, comes to see if M heard it too)
3;0	fit	I fit these. (B puts on socks; cf. These fit)
J 4;7	(be) interesting	I'm just gonna hold 'em and look at 'em and, uh, interest 'em. (they are interesting; J is just going to be interested in them)

If we try to describe the constructions in (4) as having lost the element CAUSE, we are unable to account for the novel intransitive occurrence of sensory verbs like hear and see, which are transitive but not causative. We can find an underlying CAUSE in the meanings of verbs like wash, eat, and cut only by considerably watering down the meaning of CAUSE; and if we stretch the meaning of CAUSE to include sensory verbs, it loses its semantic identity and becomes equivalent to transitivity. Causative meaning is often associated with transitivity, but not always.

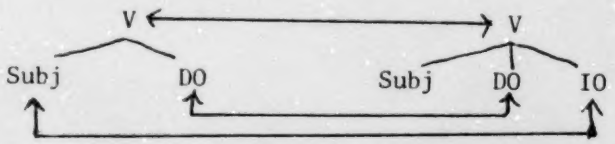
If the optional element is not semantic CAUSE, and is not an Agent noun phrase, what is it? We can get closer to an answer by representing corresponding sentences in terms of dependency trees, adapting the model developed by the French linguist Tesnière. As the diagram in (9) shows, the verb in the first sentence corresponds to the verb in the second sentence; the noun phrase in Subject position in the first sentence corresponds to the noun phrase in Direct Object position in the second sentence, as the arrows show. In the second sentence, the new argument is in Subject position. Since the diagram represents a paradigm, a correspondence, rather than a directional process, I have made the arrows double-ended.

(9) I fell ⟷ You fell me
It can hear ⟷ I can hear it



The diagram in (10) illustrates the correspondence between two- and three-argument constructions. The verb and the Direct Object remain the same for both sentences; the Subject of the first corresponds to the Indirect Object of the second; in the second, the new argument is again in Subject position.

(10) Aunt Ruth is trying to guess what I have ⟷ I'm trying to guess Aunt Ruth what I have (Jennifer)
He's gonna guess it ⟷ I'm gonna guess it to him (Christy)
She calls "Fluffy Cat" ⟷ We call her "Fluffy Cat" (Benjy)



This illustrates that the children's novel forms follow the predictions for causatives in universal grammar that have been proposed by Comrie (1975 and 1976a). Keenan and Comrie's (1977) Accessibility Hierarchy ranks syntactic positions in the order Subject > DO > IO > Oblique. For the child, the optional argument occurs in Subject position (it is usually animate, and most often human). As shown in (9) and (10), the Subjects do not correspond. In the higher-valence sentence, the Subject of the partner sentence occupies the first syntactic slot available to it on the Accessibility Hierarchy: DO in (9), and IO in (10).

In conclusion, then, I suggest that, using evidence from the child's spontaneous errors, we can represent the child's knowledge of variable-valence verb pairs most accurately as a paradigm, not in terms of deep case roles or semantic primitives, but in terms of syntactic positions. The regular relationships between transitive and intransitive verb meaning are a function of the syntactic composition of the sentence.

I have wondered to what extent my children are unique in producing novel intransitives. I suspect that they are not, and that my data illustrates the phenomenon that Fromkin has encountered in collecting

speech errors: the more you listen for them, the more frequently they seem to occur. As caretakers, we tend to respond to the meaning, not the form, of children's utterances; and as linguists, unless we are listening for certain kinds of errors, sometimes we simply don't hear them.

NOTES

1. My appreciation goes to Bernard Comrie and Sandra Thompson for sharing their insights on how cause and transitivity are reflected in language patterns.
2. It might be suggested that constructions like those in (4) constitute the child's attempts at agentless passives. However, between (2;5) and (4;0), both children produced a number of agentless passives with the auxiliary BE/get/need and the suffix -ed. In fact, for several verbs the first recorded occurrence of a novel intransitive was predated by an occurrence of the same verb in an agentless passive construction. The utterances in (4) are meant as intransitives; they are not passives by morphological default.
3. In (4) and (6) the child's utterance has a valence of one less than the standard adult usage. The verbs in (6) are normally bitransitive; those in (4) are normally transitive. If the child were to generalize the pattern to include intransitive verbs. the novel utterance would have a valence of zero. English provides only marginal models for zero-valence utterances, e.g. in It's raining and It's windy, where the semantically empty it occupies the subject position. Benjy used the intransitive predicate (be) upset with zero valence one evening while lying in bed in the dark, listening to the rain making rather scary sounds on the roof: "It's very upset. Very upset. In here."
4. The number of decreased-valence verbs for Jennifer, 17, probably reflects the fact that the diary-keeper was not alerted to notice and record them until later in her language development.
5. Adults say things like "The meat cuts easily", "The light won't turn on", and "That dress washes well". As Comrie (ms.) points out, these are usually acceptable only with progressive or habitual aspect, and usually with manner adverbials; the children's utterances do not show these restrictions.

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